

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

- 1 1. (Original) An electrical component, comprising:
2 a capacitor having first and second ends;
3 a circuit coupled to the capacitor, the circuit including magnetically-coupled windings for
4 providing capacitor-path inductance cancellation.
- 1 2. (Original) The component according to claim 1, wherein the coupled windings are discrete
2 windings.
- 1 3. (Original) The component according to claim 1, wherein the coupled windings are integrated
2 with the capacitor.
- 1 4. (Original) The component according to claim 1, wherein the coupled windings are wound on
2 a former.
- 1 5. (Original) The component according to claim 4, wherein the former is substantially non-
2 magnetic.
- 1 6. (Original) The component according to claim 1, wherein the coupled windings are formed
2 from foil.
- 1 7. (Original) The component according to claim 1, wherein the coupled windings are formed on
2 a flexible material.
- 1 8. (Original) The component according to claim 1, wherein the coupled windings are formed on
2 a printed circuit board.

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

- 1 9. (Original) The component according to claim 1, wherein the coupled windings include a
2 structure having an air core.
- 1 10. (Original) The component according to claim 1, wherein the coupled windings include a
2 magnetic material.
- 1 11. (Canceled)
- 1 12. (Canceled)
- 1 13. (Canceled)
- 1 14. (Original) The component according to claim 1, wherein the component has three terminals.
- 1 15. (Original) The component according to claim 1, wherein the coupled windings include first
2 end second coils and a first terminal coupled to a first end of the first coil and a first end of the
3 second coil, a second terminal coupled to a second end of the second coil, and wherein the
4 second end of the capacitor is coupled to a second end of the first coil.
- 1 16. (Original) The component according to claim 15, wherein a third terminal is coupled to the
2 first end of the capacitor.
- 1 17. (Original) The component according to claim 1, wherein the coupled windings include first
2 end second coils and a first terminal coupled to a first end of the first coil, a second terminal
3 connected to the second end of a second coil, and wherein the second end of the capacitor is
4 coupled to a second end of the first coil and to the first end of the second coil.
- 1 18. (Original) The component according to claim 17, wherein the first and second coils are
2 constructed as a single coil with a tap.

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

1 19. (Original) The component according to claim 17, wherein a third terminal is coupled to the
2 first end of the capacitor.

1 20. (Original) The component according to claim 1 wherein the coupled windings are wound
2 about a package containing the capacitor.

1 21. (Original) The component according to claim 1, wherein the coupled windings generate a
2 negative equivalent inductance in series with the capacitor.

1 22. (Original) The component according to claim 1, wherein the induction of the mutually
2 coupled windings generates a voltage that counteracts the voltage due to the equivalent series
3 inductance of the capacitor.

1 23. (Original) The component according to claim 1, wherein the coupled windings are formed
2 from a single tapped winding.

1 24. (Original) The component according to claim 1, wherein the coupled windings have a
2 mutual inductance greater than one of the self inductances.

1 25. (Original) The component according to claim 24, wherein the mutual inductance of the
2 coupled windings minus the self inductance of one of the coupled windings is substantially equal
3 to the equivalent series inductance of the capacitor plus any interconnect inductance.

1 26. (Original) The component according to claim 1, wherein the coupled windings have a
2 mutual inductance that is substantially of the same magnitude as the equivalent series inductance
3 of the capacitor plus any interconnect inductance.

1

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

- 1 27. (Currently Amended) A method of suppressing electrical signals, comprising:
2 coupling an inductively coupled winding circuit to a capacitor having first and second
3 ends for nullifying an inductance of the capacitor electrical path.
- 1 28. (Original) The method according to claim 27, further including modeling the winding
2 circuit with a T model having a first leg, a second leg and a third leg, wherein the third leg is
3 coupled to the capacitor.
- 1 29. (Original) The method according to claim 28, further including providing the third leg with
2 a negative inductance.
- 1 30. (Original) The method according to claim 29, further including modeling the capacitor as
2 having a capacitance and an equivalent series inductance, which is canceled by the negative
3 inductance of the third leg of the T model.
-
- 1 31. (Original) The method according to claim 27, further including selection of a connection
2 point of the coupled winding circuit by finding the point that minimizes the magnitude of the
3 output signal when an input signal is applied.
- 1 32. (Original) The method according to claim 27, further including forming discrete windings.
- 1 33. (Original) The method according to claim 27, further including integrating the capacitor and
2 the winding circuit.
- 1 34. (Canceled)
- 1 35. (Original) The method according to claim 27, further including setting the mutual
2 inductance of the coupled windings larger than the self inductance of one of the windings.
- 1

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

- 1 36. (Original) The method according to claim 35, further including setting the difference
2 between a mutual inductance of the coupled windings and the self inductance of one of the
3 windings substantially equal to the equivalent series inductance of the capacitor electrical path.
- 1 37. (Original) The method according to claim 27, further including setting the magnitude of a
2 mutual inductance of the coupled windings substantially equal to the equivalent series inductance
3 of the capacitor electrical path.
- 1 38. (Original) A filter, comprising:
2 a capacitive element; and
3 a circuit coupled to the capacitive element, the circuit including coupled windings for
4 providing cancellation of the equivalent series inductance of the capacitor electrical path.
- 1 39. (Original) The filter according to claim 38, wherein the coupled windings are discrete
2 windings.
-
- 1 40. (Original) The filter according to claim 38, wherein the coupled windings are integrated
2 with the capacitive element.
- 1 41. (Original) The filter according to claim 38, wherein the coupled windings are formed on a
2 flexible material.
- 1 42. (Original) The filter according to claim 38, wherein the coupled windings include a
2 structure having an air core.
- 1 43. (Original) The filter according to claim 38, wherein the coupled windings include a
2 magnetic material.
- 1 44. (Canceled)

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

- 1 45. (Original) The filter according to claim 38, wherein the filter has three terminals.
- 1 46. (Original) The filter according to claim 38, wherein the coupled windings are wound about
2 a package containing the capacitive element.
- 1 47. (Original) The filter according to claim 38 wherein the magnitude of the mutual inductance
2 of the coupled windings is substantially equal to the equivalent series inductance of the
3 capacitive element plus any interconnect inductance.
- 1 48. (Original) The filter according to claim 38 wherein the mutual inductance of the coupled
2 windings is larger than the self inductance of one of the windings.
- 1 49. (Original) The filter according to claim 48 wherein the difference between the mutual
2 inductance of the coupled windings and the self inductance of one of the windings is
3 substantially equal to the equivalent series inductance of the capacitive element plus any
4 interconnect inductance.
-
- 1 50. (Original) An electrical component, comprising:
2 a first pair of conductors being substantially capacitively coupled;
3 a second pair of conductors being substantially magnetically coupled, the first and second
4 pair of conductors being coupled such that the magnetic induction of the second pair of
5 conductors serves to cancel the effects of the inductance of the first pair of conductors.
- 1 51. (Original) The component according to claim 50, wherein each of the conductors in the
2 second pair of conductors is electrically coupled to a first terminal, a first conductor of the
3 second pair of conductors is electrically coupled to a second terminal, a second conductor of the
4 second pair of conductors is electrically coupled to a first conductor of the first pair of
5 conductors, and a second conductor of the first pair of conductors is electrically coupled to a
6 third terminal.

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

1 52. (Currently Amended) The component according to claim [50] 51, wherein a first one of the
2 conductors of the first pair of conductors and a second one of the conductors in the second pair
3 of conductors are formed from a single conductor.

1 53. (Original) The component according to claim 50 wherein the magnetic flux due to currents
2 in the first pair of conductors links the second pair of conductors.

1 54. (Original) An electrical component, comprising:
2 a first conductor having first and second portions configured such that the first and
3 second conductor portions are magnetically coupled; and
4 a pair of capacitively coupled conductors, wherein the first conductor is coupled to a first
5 one of the pair of conductors such that the magnetic induction of the first conductor nullifies
6 effects of the equivalent series inductance of a path from the first conductor through the pair of
7 conductors.

1 55. (Original) The component according to claim 54, wherein a first end of the first conductor is
2 coupled to a first terminal, a second end of the first conductor is coupled to a second terminal, an
3 intermediate portion of the first conductor is coupled to the first one of the pair of conductors,
4 and a second one of the pair of conductors is coupled to a third terminal.

1 56. (Original) An electrical circuit, comprising
2 a first subcircuit; and
3 a second subcircuit coupled to the first subcircuit, the second subcircuit including
4 magnetically coupled windings for nullifying the effect of an equivalent series inductance of a
5 path through the first subcircuit.

1 57. (Original) The circuit of claim 56, wherein the first subcircuit includes a capacitor.

1 58. (Original) The circuit of claim 56, wherein the coupled windings are formed on a printed
2 circuit board.

Appl. No. 10/082,616
Reply to Office Action of October 6, 2003

Docket No. MIT-106PUS

- 1 59. (Original) The circuit of claim 56, wherein the coupled windings are formed on an
2 integrated circuit.
- 1 60. (Currently Amended) The circuit of claim 56, wherein the coupled windings are [formed
2 using a printing process] printed.
- 1 61. (Original) The circuit of claim 56, wherein the coupled windings are formed on a flexible
2 material.
- 1 Claims 62-66 (Cancelled).